SYSTEM TRAINING PLAN

FOR GUARDIAN

(JOINT LAND ATTACK ELEVATED NETTED SENSOR SYSTEM)

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SYSTEM TRAINING PLAN (STRAP)
FOR THE
GUARDIAN SYSTEM

1. SYSTEM DESCRIPTION

a. Narrative

The mission need is "To protect U.S., Allied and coalition forces, civilian population centers, as well as critical military and geopolitical assets from air and missile attacks". This mission need was articulated in the joint theater air and missile defense (JTAMD) mission needs statement (MNS), 17 May 1999, and promulgated by Joint Requirements Oversight Council Memorandum 065-99, 7 July 1999. The JTAMD MNS further stated that, "The crucial mission need is to develop an integrated, interoperable Joint TAMD family of systems (FoS) architecture that will efficiently and effectively enhance the level of protection provided to forces and assets." The specific focus of Guardian is to provide a counter-land attack cruise missile (LACM) surveillance capability for the TAMD FoS. This requires that Guardian detect, track, identify / classify very low-flying, small radar cross section (RCS) LACMs and support engagements by JTAMD FoS.

The Guardian system has two functional radar subsystems (surveillance and fire control), each capable of stand-alone contribution to JTAMD. Each of the Guardian subsystems consists of a platform, payload(s), processing station, and dedicated mission support equipment. The platform consists of an aerostat, tether, and a mooring station. The aerostat is a non-rigid, aerodynamically shaped, helium and air filled bag. The tether is a powered, fiber optic cable that secures the aerostat and controls its operating altitude and provides power and data exchange media between the aerostat, its payload, and the ground elements. The mooring station anchors the aerostat to the ground, provides a safe haven during severe weather, and allows maintenance of the payload. The payload(s) consists of a surveillance radar or fire control radar and supporting mission communications equipment, which include JTIDS and Cooperative Engagement Capability (CEC) antennas and power amplifiers in both subsystems. The processing station houses soldiers, radar signal and data processors, aerostat flight operations / mission operations displays, interface equipment, radios (which include ground based hardware and software for JTIDS and CEC) and displays for operations and support. Ground mission support equipment includes: generators, maintenance support equipment, prime movers, shelters, cranes, forklifts, and helium transport trailers.

The mission of the U.S. Army Air Defense Artillery (ADA) is to protect the force and selected geopolitical assets from aerial attack, missile attack, and enemy surveillance. Inherent in the Army AMD mission is the defeat of the theater missile (TM) threat, including LACMs. The TAMD mission consists of three operational elements: offensive counter-air (OCA) operations, defensive counter-air (DCA) operations, and TAMD command, control, communications, computers, and intelligence (C4I). The elements of DCA are active air defense and passive defense. Guardian directly supports all facets of active air defense and contributes to OCA / attack operations, passive defense, early warning (alerting / de-alerting), and C4ISR. Guardian supports full spectrum operations from stability operations (SO) and smaller-scale contingencies (SSC) to major theater wars (MTW). Guardian is primarily a theater-strategic and operational asset; however; it has inherent capabilities to support tactical (divisional) operations although the system is not intended to locate with or move with forward maneuver forces. Guardian detects and reports surface-moving targets and, thereby, supports development of the surface portion of

the common tactical picture (CTP). Guardian supports the execution of the JTAMD missions by providing wide area surveillance, CID support, TAMD FoS engagement support, integrated fire control (IFC), and ground and air situational awareness. Guardian is a major contributor to the TAMD single integrated air picture (SIAP) and Combat Identification (CID) objectives. Guardian is also a critical enabler for Integrated Fire Control (IFC) advanced engagement techniques, TAMD BMC4I automated battle management aids, attack operations support, time-critical targeting, and passive defense early warning. Guardian can also detect and track surface moving targets, and large caliber rockets (LCRs) and/or TBMs during their boost phase and other portions of their trajectory within the radar's azimuth and elevation coverage.

Surveillance. Guardian performs very long-range surveillance to detect and track all airborne platforms. The track information is transmitted in near-real-time to participants on the joint data network (JDN) and, potentially in the future, over a joint composite tracking network (JCTN). Guardian detects and tracks large and very small radar cross-section aerial targets at high and very low altitudes. Guardian will detect and track individual or multiple surface moving targets and track individual surface moving targets when cued or tasked. The Guardian surveillance capability provides significant enhancements to ground and air situational awareness, information dominance, and force protection.

Engagement Support. Guardian enables and supports advanced engagement concepts and, thereby, removes some of the terrain-imposed restrictions on surface weapons and frees interceptor aircraft for other activities after missile launch (forward pass only). Guardian's fire control radar uses a cue from its surveillance radar or some other airborne surveillance asset, such as AWACS, to establish a very high precision track on a target. Once a decision is made to engage a target, data from the fire control radar is passed to the engaging fire unit for prosecution. If the target engagement is prosecuted by the Navy's Aegis Standard Missile (SM), the Guardian's fire control radar also provides end game illumination. The combination of the two radars provides very long range, highly accurate, continuous tracks. Guardian is also capable of supporting air directed surface to air missile (ADSAM) engagements using only the fire control radar by employing the inherent sector search capability in the fire control radar (i.e., a self-cue). This sector search capability does not overly restrict engagement support performance, nor does it preclude the use of an adjunct surveillance cue from an external source should it be available. Guardian will also support attack operations and fire support missions by cross-cueing other sensors and providing positional information on selected potential targets.

Integrated Fire Control (IFC). Guardian performs precision tracking of selected airborne targets to support IFC for engage on remote and forward pass. *Engage on remote* uses the Guardian precision track information or a ground-based or airborne weapon system in lieu of organic sensor information, to engage and destroy hostile aircraft and theater missiles. Guardian provides sufficiently accurate track information that weapon systems can launch an interceptor and guide it to the point at which the missile seeker locks on the target and executes a terminal homing intercept which occurs beyond-line-of-sight (BLOS) and non-line-of-sight (NLOS) from the surface-based weapon system. This capability allows for the full use of the effective interceptor range by effectively removing the effects of terrain from the engagement equation, and is critical for LACM defense. Forward pass extends the engage on remote concept to

include controlling the friendly interceptor in flight and guiding it to intercept, thus freeing the surface fire unit from being required through target intercept.

b. First Unit Equipped (FUE) date: TBD

2. TARGET AUDIENCE

The proposed target audience for GUARDIAN is expected to come from Air Defense Artillery (ADA), Ordnance, Engineer, and Signal career management fields. The Guardian system may be manned by a mix of active duty, reserve, national guard, DoD civilian, and contractor support personnel. Cost effective alternatives for minimizing active duty personnel authorizations to man the Guardian system shall be considered. Although it is not envisioned that any new Military Occupational Specialties (MOSs) will be needed, further review may necessitate new MOSs. It is estimated that Guardian (surveillance or fire control) will be manned by up to 30 personnel to allow for 24-hour operations. The manpower requirements will be determined by the Qualitative and Quantitative Personnel Requirements Information (QQPRI), the Sustainment and Supportability Analysis (SSA), and Manpower and Personnel Integration (MANPRINT) analysis. The types of skills anticipated to be required in a Guardian unit include, but are not limited to, the following: hydraulic / mechanical maintenance; power generation maintenance; electrical /electronics maintenance; maintenance management; heavy equipment operations; computer and intelligence tactical operations; AMD operations; security operations; inflation/deflation operations; and flight operations/flight safety. The specific target audience list of MOSs to support Guardian is TBD.

3. ASSUMPTIONS

The following assumptions apply to the Guardian system:

- One of the MOSs may be 14J Air Defense Command, Control, Communications, Computer and Intelligence (C4I).
- The Department of the Army will provide the necessary resources, personnel, and equipment required to implement GUARDIAN programs of Instructions (POIs).
- The quality, aptitude, and skill requirements for Guardian personnel will not be more stringent than that of the target audience.
- There will be no increase in the total Army force structure to support the fielding of Guardian.
- Guardian New Equipment Training (NET) is the responsibility of the materiel developer and may be conducted by the prime contractor in support of training development, testing and fielding.
- The Guardian system will be designed with Embedded Training (ET) subsystems that support all training categories.
- Operations and maintenance design of the Guardian system and Training, Aids, Devices, Simulators and Simulations (TADSS) will meet Human Factors Engineering, design criteria and requirements from Military Standard (MIL-STD)-1472 and MIL-H-46855, Human Engineering Requirements for Military Systems, Equipment.

- Guardian system associated TADSS will be provided to units concurrent with system fielding.
- There are unique Government Furnished Equipment (GFE) items (e.g., Navy Cooperative Engagement Capability (CEC)) that may require specialized or additional training.

4. TRAINING CONSTRAINTS

The following constraints are envisioned to impact training of the Guardian system. The training constraints identified provide parameters for Guardian training.

- The training equipment, components, and devices must be provided in sufficient quantities and within the appropriate time frames to support system fielding.

- Operations and maintenance design of Guardian system Training Aids, Simulators and Simulations (TADSS) will be per Human Engineering (HE) design criteria and requirements.

- Use of hazardous materials or exposure to health hazards shall be minimized or eliminated per AR 40-10. Personnel with potential exposure to hazardous materials will be trained on safe handling procedures per Occupational Safety and Health Agency (OSHA) CFR 29 Part 1910.1200, Hazard Communication

- Equipment will be analyzed to identify and eliminate hazards or reduce the associated risk to an acceptable risk level.

- Training for the Guardian system will be developed per TRADOC Regulation 350-70 Training Development Management, Process, and Products, and within the framework of the Materiel Acquisition Process (DOD 5000.2-R). Training will be conducted on a continuing basis of support for the Guardian MOSs.

- Existing training facilities will be used whenever possible to support the Guardian system. Every attempt should be made to co-locate the training for sharing of tactical equipment and training devices if required.

- Required resources and facilities must be funded and/or provided by the Training and Doctrine Command (TRADOC/JLENS) Project Office.

- Training literature and publications must be provided in sufficient quantity and within required time frames by the materiel developer /prime contractor to support Guardian fielding and per TRADOC Reg. 350-70.

- Initial Entry Training (IET) will be on a continuing basis to support the Guardian per MOSs.

5. TRAINING CONCEPT (AC/RC)

The materiel developer, in conjunction with the combat developer and training developer, will develop a training support package for the system in accordance with the systems approach to training (SAT) process using the Automated Systems Approach to Training (ASAT) process. To support sustainment training of operators, maintainers, and or enhanced operator/maintainer, an embedded training capacity is required. The training software database must be configurable to reflect real world threat scenarios. The embedded training must be distributed interactive simulation (DIS) and high-level architecture compliant.

The training concept encompasses the Combined Arms Training Strategy pillars of: individual collective (unit) and self-development training. Complete training sub-systems will be required to support institutional training. Training on the system will include launch and retrieval operations, flight operations, radar operations, and organizational maintenance. Operation and maintenance of system support equipment (forklifts, man-lifts, etc.) will be included as part of the overall training on the system. Training will consist of classroom instruction and hands-on instruction using actual equipment with ET capability and TADSS. Proficiency and sustainment will be maintained through real world mission performance, participation in field training exercises, and the use of embedded training on radar and ground-based processing equipment training capabilities as outlined in the system ARTEP. Guardian system embedded training must interface, interact and accept training data from Patriot, MEADS and Aegis/SM (e.g., capable of viewing the same simulated air picture viewed by Patriot/Aegis),

6. TRAINING STRATEGY (AC/RC)

The U.S. Army Air Defense Artillery School (USAADASCH), in conjunction with the U.S. Army Ordnance Missile and Munitions Center and School (USAOMMCS), will establish a training base to support all fielded units with replacement personnel. This system training plan (STRAP) is the Guardian Master Training Plan and provides for training of equipment operators/maintainers, repair personnel and products to provide sustainment training, collective training plans, scenarios for embedded training software, and training for fielded units in tactics, techniques, and procedures (TTP) for the system

Embedded training ensures effective sustainment of critical operations and maintenance skills. System embedded training can permit training to be performed under realistic but simulated conditions. This capability supports individual, team, and unit collective training by providing simulated problem situations that replicate those expected to be encountered in the actual mission operations. Unit training will be conducted in field environments in individual and collective modes.

a. New Equipment Training Strategy: A materiel developer/contractor developed training package will be delivered to the unit during the New Equipment Training (NET). This package will be used for sustainment and collective training after NET. The NET package will be developed using the TRADOC SAT process and USAADASCH will provide an Army Training and Evaluation Plan (ARTEP).

The MATDEV will work with the training developer (TNGDEV) to design and publish a New Equipment Training Plan (NETP) using Army Modernization Training Automation System (AMTAS) that encompasses the total training subsystem. The NETP is a living document. USAADASCH will validate all NET courses, materials, and products developed. All Guardian system equipment and the training subsystems with all its devices and products must be available for NET.

The training designed will constitute a complete training subsystem. It will include, but is not limited to, individual and collective analysis; institutional and unit TADSS; I&KPT; formal, contractor NET on site for system operators and maintainers; and an Internet web browser compatible IMI Training Support Package (TSP). For Guardian this training will be designed as an exportable multimedia-training package, complete with digitized POI, lesson plans, technical manuals, student and instructor guides, and a course management plan. The TSP will include self-taught "how-to" tutorial modules, accessible via distance learning, covering all aspects of the system and a diagnostic test module that permits identification of soldier training proficiency by module. The TSP will be used during the course of NET and, in addition to other NET materials, will be left with the unit for future NET/Sustainment Training.

- Staff Planner's Course. A program-oriented staff planner's course to familiarize subject matter experts (SMEs), officers, Warrant Officers and senior NCOs at all levels in the management and deployment of the Guardian. The course describes the mission, system components, operational and functional capabilities, maintenance concept, and the Guardian training program.

- Instructor & Key Personnel Course. This course trains TRADOC instructors, New Equipment Training Team (NETT) members, training developers, and other key personnel in the training base. Training will be scheduled to minimize disruption of ongoing training and allow maximum attendance of the target audience. USAADASCH will validate the I&KP training package prior to the first presentation of I&KP training. Validation will be based on performance testing and testing of a representative sample of the target audience. Personnel having completed I&KP training should be stabilized in the institution to ensure availability of qualified personnel to train soldiers and develop training requirements and products.

b. Institutional Training Strategy (Warrior)

Training is developed per TRADOC Regulation 350-70 and designed to be safe, battle focused, derived from the Army Universal Task List (AUTL) (protect the force), wartime missions, and based on ADA doctrine. It will use the Systems Approach to Straining (SAT) process, and products will be developed using the Automated System Approach to Training (ASAT) software program. Then concept for collective/unit training is to conduct training per Army training guidance. Since four of the six TOE ADA brigades are stationed at Fort Bliss, the preponderance of training will be accomplished at Fort Bliss. Other TRADOC schools will conduct all Guardian peculiar

(e.g., generators, vehicles, radios, etc.) at their respective locations. CEC equipment training for U.S. Army soldiers will be coordinated with and conducted by the U.S. Navy (TBR). USAADASCH is the proponent for web-based training and has the responsibility for developing the MTP/ARTEP. The institutional training design is based upon the following criteria:

- Instruction is performance-oriented, emphasizes hands-on practical exercises, and prepares Guardian soldiers to achieve proficiency on individual and collective tasks.

- Training is designed to be sequential by steps/procedures and will progress through the skill levels. Institutional training programs capitalize on ET/TADSS technology through the use of devices that support efficient and effective training. The actual equipment is then saved and used only to validate the transfer of learning from device to system.

- Ensure training ranges are safe and training is effective. Ranges are environmentally nondestructive and are used to train inflation, deflation, march-order and emplacement procedures.

USAADASCH, Fort Bliss, is the proponent for Guardian institutional training, Warrant Officer training, Officer Basic course and Captain's Career course training. This training will include search/track doctrine and techniques, march order and emplacement, inflation and deflation operations, payload installation, launch and recovery techniques, operation and maintenance of the equipment. Officers and Warrant Officers will receive training on flight operations, weather, tactics, techniques and procedures (TTP). The MOS (TBD) trained crewmembers will train on Guardian system operations. The AIT design is based upon the training concept to prepare an entry-level soldier to qualify as a skill level one (SL1) soldier. Listed below are the institutional courses of instruction:

(1) MOS (TBD) Aerostat Crew Member/Mechanical Technician; Aerostat Crew Member/Electrical Technician; Aerostat Crew Member/Aerostat Technician AIT – Guardian

USAADASCH, 6th ADA Brigade will conduct Aerostat Crew Member/ Mechanical Technician, Aerostat Crew Member/Electrical Technician, Aerostat Crew Member / Aerostat Technician AIT for the Guardian system. The training will be (TBD) weeks in length to train an initial entry soldier in MOS (TBD) in the following areas of instruction (List may not be all-inclusive):

Aerostat Crew Member:

- Introduction to aerostats, the principal of helium, general aerostat principles of flight, safety, airborne aerostat equipment introduction;

- Inflation procedures, mounting of hardware, and rigging;
- Launch and recovery operations, flight operations, flight director's work station, records, emergency procedures;
- Deflation operations, folding and storage of the aerostat;
- And operation of and qualifying on ancillary support equipment.

After the soldiers have reached proficiency with the above instruction they will be split into respective tracks to learn specific skills as follows:

Mechanical Technician

- Introduction to hydraulics, introduction to diesel motors, introduction to mooring station operations, introduction to test, measurement and diagnostic equipment (TMDE), and safety;
- And mooring station operations and maintenance, launch and recovery procedures, march order and emplacement procedures.

Electronic Technician

- Introduction to electrical theory, introduction to airborne electronics, introduction to mooring stations electronics, introduction to TMDE, safety, fiber optics trouble shooting and repair;
- And trouble shooting procedures, electrical repair procedures.

Aerostat Technician

- Introduction to aerostat materials, introduction to repair procedures, safety;
- And procedures for replacing rigging, tether termination procedures.

MOS (TBD) Radar Operator Surveillance/Fire Control Radar

Radar Operator Surveillance

- Introduction to radar theory, introduction to Processing Station operations, introductions to TTP and safety, and introduction to communications equipment;

- And operations and maintenance of surveillance radar, TMDE, march order and emplacement of the Processing Station, communications, search/track procedures, supporting target engagements, and combat identification procedures.

Radar Operator Fire Control Radar

- Introduction to radar theory, introduction to Processing Station operations, introductions to TTP and safety, and introduction to communications equipment;

- Operations and maintenance of Fire Control Radar, TMDE, march order and emplacement of the Processing Station, communications, search/track procedures, supporting target engagements, and combat identification procedures.

(2) Career Field (CF) (TBD) Officer Basic (Weapons Track) Course (OBC) and Captain's Career Course (CCC).

The USAADASCH, 6th Brigade conducts the Guardian officers' training. Both the officer's Basic and CCC courses include flight operations of the elevated platform, understanding weather and the effects on flight operations, emergency procedures, safety, and inflation and deflation operations. The course will also contain instruction on the processing station, operations of the radar (surveillance and Fire Control Radar), ADA tactics and techniques, supporting beyond line of sight engagements, communications, and combat identification. This POI (TBD) will be (TBD) weeks in duration. The CCC will include instruction associated with final certification of the individual as a qualified Flight Director for the Guardian System.

CF (TBD) Warrant Officer Training - Guardian

The USAADASCH, 6th Brigade conducts the Guardian Warrant Officers' training. The Warrant Officer courses include flight operations of the elevated platform, understanding weather and the effects on flight operations, emergency procedures, safety, and inflation and deflation operations. The course will also contain instruction on the processing station, operations of the radar (surveillance and Fire Control Radar), troubleshooting, repair and maintenance, TMDE, diagnostics, and Guardian logistics. The Senior Warrant Officer courses will include instruction associated with final certification of the individual as a qualified Flight Director for the Guardian System.

c. Unit Sustainment Training (Warfighter)

The unit commander and unit trainers accomplish the sustainment training of individual and collective tasks through a unit training strategy that is tailored to the unit's mission-essential task list (METL), operational availability and the Combined Arms Training Strategy (CATS). The training materials include the NET training support packages, ET/TADSS, sustainment TSP (multimedia) and soldier training products. Collective training events (live and virtual), combat training center exercises, operational availability training, team-level to battery level training all combine to support the standards defined in the Guardian Army Training Evaluation Program (ARTEP), Mission Training Plan (MTP) and Crew/Battle Drills. Individual training to support skill level 2 tasks is designed against the standards identified in the JLENS Soldier Training Publication (STP).

7. TRAINING PRODUCTS

A major part of the Guardian training subsystem is the system Training Support Package (TSP). It contains the full complement of training support products required to support training of the system in the institution, during NET, and in support of unit sustainment training. Wherever possible, the TSP components will employ ET capabilities, be multimedia based, and or use distance learning technologies. The training strategy is to teach institutional and unit training using ET/TADSS combined with standard Programs of Instruction (POIs). Individual and collective tasks will be taught using the institutional and/or unit ET/TADSS.

Embedded training ensures effective sustainment of critical operations and maintenance skills. System embedded training can permit training to be performed under realistic but simulated conditions. This capability supports individual, team, and unit collective training by providing simulated problem situations that replicate those expected to be encountered in the actual mission operations. Unit training will be conducted in field environments in individual and collective modes.

Embedded training is the ability to train a task (s) using the Guardian equipment. It will not adversely impact the operational capabilities of the system. Embedded training requirements must be identified as an essential operational capability of the system in the Concept Exploration phase of development. It includes embedded user assistance (help); embedded simulation, emulation or stimulation capability; embedded connections between the prime system and the training system; and training instrumentation. Embedded training includes system design that allows dual use of communication and instrumentation capability for training and tactical use and the use of system operating controls with appended/embedded training simulations. To the greatest extent possible, it must be able to use operational data stored in the prime system as well as upload data specific to the training event. It can also provide a mechanism for interactive access, feedback, storage and dissemination of lessons learned as they occur.

(1) ET Categories

There are four embedded training categories based on the level of training to be fulfilled. They are aligned along the training spectrum from individual to collective tasks for Guardian.

Category A: Individual/Operator. The objective of Category A is to train and sustain individual operator and maintenance task skills.

Category B: Crew/Team. Category B's objective is to train and sustain combat ready crews and teams. This category builds on individual skills acquired from Category A.

Category C: Functional. The objective of Category C is to train and sustain commanders, staffs, and crews/teams within each functional area to be utilized within their operational role.

Category D: Force Level/Combined Arms and Battle Staff. Category D's objective is to train and sustain combat ready commanders and battle staffs utilizing the operational system in its operational role.

(2) ET Methods

There are three methods for building embedded training technology into systems.

(a) Fully embedded. All embedded training features are built into the primary system components. In this case, the embedded capability is distributed with the prime system on a one-for-one basis. The requirement must be stated as an essential operational characteristic of the system by the combat and training developers. Embedded training capabilities impact the system's concept formulation package (CFP) and cost assessment. In addition, ET must be included in the operations and mission profile used to develop Reliability and Maintainability (R&M) requirements.

(b) Appended. The embedded training system is installed or attached to the primary system components when needed, and removed when not needed. It is likely to require that the operational system have permanent, designed-in components such as sensors, power source adapters, connectors, or mounting brackets.

(c) Umbilical. Like appended, umbilical is attached to the prime system components when needed, and removed when not needed. It involves additional physical connections to external components such as computers, instructor/trainer consoles, Local Area Networks (LAN), and long-haul digital circuits. It often connects many systems, as in the use of Army Battle Command Systems (ABCS), used as the interface with constructive simulations.

(3) Embedding Training in Operational Systems.

Embedded training can be implemented in four broad categories of systems. They are Sustaining Base and Office Automation, C^3I, Weapons Systems, and Models & Simulations.

Each category is a COE domain and will be interoperable with the other domains as part of the Defense Information Infrastructure (DII) COE.

(a) Sustaining Base and Office Automation. In this case, embedded training is primarily aimed at individual training. The user will be able to use fully embedded coaches and performance support systems (PSS) for training during operations. He can also use appended training using temporarily loaded or by temporarily running a training capability from a CD ROM. The user can also train using the system in an umbilical mode when training on-line with another networked user, or when accessing training information through the Army Training Digital Library when it is fully functional.

(b) C3I and Support Systems. The ABCS system of systems is one area that can take advantage of embedded training capabilities. By designing system software that uses artificial intelligence to coach users in correct ways or even better ways to use the system, the individual embedded training can greatly reduce initial and sustainment training requirements. For team, functional crew/staff, and force level commanders and staffs, the C^3I and support systems can train in a combination of appended and umbilical training with the ABCS systems linked to each other on a network and to a scaleable future simulation through the synthetic environment (SE).

(c) Weapons Systems. N/A.

(d) Models and Simulations. Models and simulations support the training capabilities of the soldiers using systems from the other three domains. There are primarily two ways they will accomplish this, in order of preference:

-- Embedded Simulations. In many sustaining base (C^3I and weapon systems rapid leaps in technological capabilities will allow system developers to embed some simulator capability into weapons systems and to embed some simulation capability in sustaining base and C^3I systems to allow students and operational staffs to train and rehearse locally.

-- Stand-alone Simulations. Future simulations will be accessible on demand by commanders who want to train and or rehearse their units using sustaining base automation, C^3I systems, or weapons systems linked through the synthetic environment. This can be simply on a single post or with units spread across thousands of miles.

The Guardian enhanced operator/maintainers, through a combination of individual and collective tasks are trained to the skill levels required to operate and maintain the Guardian system. This will include using DL, DIS and STOW capabilities. The training standards for the Standards in Training Commission (STRAC) per DA PAM 350-38 Standards in Weapons Training will not need to be developed, as Guardian does not have ammunition associated with it. Guardian training device programmed growth will allow interaction with the Air Defense Combined Arms Tactical Trainer (ADCATT) and will provide the training capability to perform interface and inter-operability functions. Integrated training with other joint and combined arms units training will provide continuity on the battlefield for situational awareness and will support Joint, Army and Air Defense doctrine.

Training System

A major part of the Guardian training subsystem is the system Training Support Package (TSP). It contains the full complement of training support products required to support training of the system in the institution, during NET, and in support of unit sustainment training. Wherever possible, the TSP components will employ ET capabilities, be multimedia based, and or use distance learning technologies. The training strategy is to teach institutional and unit training using ET/TADSS combined with standard Programs of Instruction (POIs). Individual and collective tasks will be taught using the institutional and or unit ET/TADSS.

a. TADSS/ET (Detailed information concerning each TADSS is located at Annex I).

(1) Institution TADSS/ET Requirements

- Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance with the following Embedded Training capabilities:

    * On-Line Training Mode
    * Off-Line Training Mode
    * A Terrain Mapping Mode

- Guardian system sensor with embedded training capabilities

- Institutional Maintenance Trainer (IMT) with embedded training capabilities

(2) Unit TADSS/ET Requirements envisioned for Guardian system:

- Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance with the following Embedded Training capabilities:

    * On-Line Training Mode
    * Off-Line Training Mode
    * A Terrain Mapping Mode

- Guardian system with embedded training capabilities

(3) NET TADSS/ET Requirements

The NET device requirement is to have ET and devices available during NET. Specific training devices and ET capabilities are covered in the appropriate institutional and unit TADSS/ET paragraphs.

b. Multimedia Products. Typical multimedia products that will be used to support Guardian system training are:

- Computer-Assisted Instruction (CAI)
- Computer-Based Training (CBT)
- Web-Based Training (WBT)
- Compact Disk-Read Only Memory (CD-ROM)
- Interactive Electronic Technical Manuals (IETM)

c. Manuals

- Mission Training Plans (MTPs)
- Soldiers Manuals (SMs)
- Field Manuals (FMs)
- Technical Manuals (TMs)
- Army Training and Evaluation Programs (ARTEPs)

d. System Hardware/Software

Guardian equipment hardware, software, and components to support institutional training will be based on a need assessment and analysis. This will determine the number and types of hardware, software, and components to be allocated for use in the service schools.

8. TRAINING SUPPORT

a. Distance Learning

Guardian will use state-of-the-art distance learning capabilities. Distance Learning (DL) provides the capability to enhance and sustain Total Army readiness by delivering standardized training to soldiers and units at the right place and time using multiple delivery means and techniques. It accomplishes this by leveraging technology and training design efficiencies to provide more cost effective and efficient training. Training sites, connectivity, software, hardware, and Internet access capabilities must be considered. The most commonly used DL delivery techniques are:

- Correspondence Course -- Self-paced training materials that can be used for individual and collective training.

- Computer Aided Instruction – The use of computers to aid in the delivery of instruction. CAI exploits computer technology to provide for the storage and retrieval of information for both instructor and student.

- Computer-Based Instruction -- Refers to course materials presented and controlled by a computer and which use multiple requirements for student responses as a primary means of facilitating learning. It is essentially individualized self-paced or group interactive instruction combined with multimedia presentations.

- Video Teletraining -- provides the means to distribute training to any number of students simultaneously. Different methods of instruction may be used to present the training.

- Simulation -- This is any representation or imitation of reality (abstract) and includes simulating part of a system, the operation of a system, and the environment in which the system will operate.

- Distributed Interactive Simulation -- DIS is linking all types of unit training into the same network permitting wide-scale integration of various simulation systems and live training without regard to geographic limitations.

- Embedded Training Systems -- ET provides the capability to train a soldier to standard using embedded training capabilities contained in operational equipment. The goal is that ET will be interoperable within a common operating environment linking geographically separated units in live, virtual, and constructive simulation. It provides users assistance by embedded simulation, emulation or simulation capability, embedded connections between the prime system and the training system and training instrumentation.

- Interactive Electronic Technical Manual (IETM) – A technical manual delivered electronically. IETM possesses the following characteristics: it can be presented either on a desktop or a portable device; the elements of data constituting the IETM are so that a user's access to the information is achievable by a variety of paths; and it provides procedural guidance, navigational directions, and other technical information required by the user.

b. Facilities

Existing training schools will be used where possible to support the Guardian system. Every attempt should be made to co-locate schools at one location to share tactical equipment and training devices. Guardian classroom facilities must accommodate Classroom XXI requirements or use existing Classroom XXI and DTT installations if suitable. The training facility to house the training devices and classrooms for Guardian training must conform to the Guardian training strategy. Ranges and maneuver areas must be sufficient in size to accommodate Guardian system deployment when supporting operations and engagements. Required resources for facilities defined in paragraph five (5) of the Guardian ORD must be funded and/or provided by TRADOC/Project Officer.

c. Ammunition: N/A

d. Other: TBD

The need to conduct training with or at the Army's Combat Training Center (CTC) or Joint Readiness Centers (JRTC) will be determined at some future date. Every effort should be made

to exercise Guardian system capabilities in a simulated and or live environment. Consideration of permanently stationing one set of equipment to support CTC/JRTC will be analyzed in the CTEA.

9. POST-FIELDING TRAINING EFFECTIVENESS ANALYSIS (PFTEA)

As a minimum, a PFTEA will be conducted within 18-24 months of the Guardian system Initial Operating Capability (IOC), subject to availability of resources, to assess efficiency and effectiveness of the total system training program after the completion of NET training when availability of resources permits.

ANNEX A

TARGET AUDIENCE

COURSE MATRIX

FUNCTIONAL AND PROFESSIONAL	USAADASCH	USAOMMCS	
TBD	X		
TBD		X	
TBD	X		
TBD	X		
Warrant officers	X	X	

	LEGEND
OBC	Officer Basic Course
CCC	Captain's Career Course
USAADASCH	United States Army Air Defense Artillery School
USAOMMCS	United States Army Ordnance Missile & Munitions Center and School

ANNEX B

INSTITUTIONAL TRAINING (WARRIOR)

Military Occupational Specialty (MOS) (present data by MOS by school)
Training Strategy for Advanced Individual Training (AIT): (Guardian)
Location: Fort Bliss, Texas
Lesson Plans: TBD
Course Start: TBD
Classes per year: TBD
Student load per Fiscal Year (FY): TBD
Integrated Training Strategy for Guardian Warrant Officer Courses
Location: Fort Bliss, Texas
Lesson Plans: TBD
Course Start: WO SMT Course – TBD
Classes per year: TBD
Student load per Fiscal Year (FY): TBD
Classes per year: CCC – TBD
Student load per Fiscal Year (FY): TBD
Integrated Training Strategy for ADA Officer Courses OBC
Location: Fort Bliss, Texas
Lesson Plans: TBD
Course Start: OBC – TBD
Classes per year: TBD
Student load per Fiscal Year (FY): TBD
Classes per year: CCC – TBD
Student load per Fiscal Year (FY): TBD
USAADASCH Analysis Requirements
Training Requirements Analysis System (TRAS) Documents
Individual Training Plan: TBD
Course Administrative Document: TBD
Program of Instruction: TBD (TBD for Total Army School System (TASS) Battalions)
Training Support Required: Refer to Paragraphs 7 and 8 and Annex I

ANNEX B

Military Occupational Specialty (MOS) (present data by MOS by school)
Training Strategy for Advanced Individual Training (AIT):
Location: US Army Ordnance Missile & Munitions Center & School (OMMCS) Redstone Arsenal, Alabama
Lesson Plans: TBD
Course Start: TBD
Classes per year: TBD
Student load per Fiscal Year (FY): TBD
Integrated Training Strategy for Maintenance Technician
Location: US Army Ordnance Missile & Munitions Center & School (OMMCS) Redstone Arsenal, Alabama
Lesson Plans: TBD
Course Start: TBD
Classes per year: TBD
Student load per Fiscal Year (FY): TBD
USAOMMCS Analysis Requirements
Training Requirements Analysis System (TRAS) Documents
Individual Training Plan: TBD
Course Administrative Document: TBD
Program of Instruction: TBD (TBD for TASS Battalions)
Training Support Required: Refer to Paragraphs 7 and 8 and Annex I

UNIT/SUSTAINMENT TRAINING (WARFIGHTER)

1. Individual Training:

a. Strategy: Individual skills will be sustained through daily operational training, crew/battle drills, situational training exercises, field training exercises, and use of the ARTEP Mission Training Plan. Commanders ensure individual proficiency per applicable soldier's manuals; e.g. to maintain individual skill proficiency on the Guardian system, soldiers designated to operate and/or maintain it will train as follows:

MOS	Training Event	Frequency
TBD	MOS Training	Weekly
TBD	MOS Training	Weekly
TBD	MOS Training	Weekly
TBD	MOS Training	Weekly

b. Products: Required to sustain individual skills.

Product	Required Date	Resource Requirement	Responsible Agency
CATS		In-House	DOTD, USAADASCH
MTP/Crew/Battle Drill	TBD	In-House	DOTD, USAADASCH
Tables			
TBD	TBD	In-House	DOTD, USAADASCH
TBD	TBD	In-House	USAOMMCS
Operator's TSP	TBD	System Contract	Training Developer TRADOC
Maintainer's TSP	TBD	System Contract	Training Developer TRADOC
System TM	TBD	System Contract	Materiel Developer

4. Collective Training:

a. Strategy: The collective skills to employ and maintain the system are learned and sustained through repetitious application of crew/battle drills, STX, command post exercises, and training with the close combat tactical trainer, engagements, and tactical simulations. ADA doctrine and tactics will be incorporated. Training will be conducted in accordance with the applicable MTP. To sustain collective proficiency, the following are recommended training echelons, events, and frequencies:

Strategy (Continued)		
Echelon	**Event**	**Frequency**
Battalion	Maneuver	
	MAPEX	Annually
	CPX	Quarterly
	STX	Quarterly
	EXEVAL	Annually
	TEWT	Annually
	FTX	Annually
	CALFEX	Annually
Battery	Maneuver	
	MAPEX	Annually
	STX	Quarterly
	TEWT	Annually
	CALFEX	Annually
	FTX	Semi-Annually
Platoon	Maneuver	
	MAPEX	Annually
	TEWT	Annually
	STX	Quarterly
	LFX	Annually
	FTX	Annually
	DEPEX	Semi-Annually
	EX-EVAL, CTC	Semi-Annually
Section	Maneuver	
	STX	Quarterly
	JTX	Annually
	Engagements	
	Table IX (Tactical equipment, Targets)	Quarterly
	Table X (Tactical equipment, Targets)	Quarterly
Crew	Maneuver	
	Train-up (TPT, Targets, FOFT)	
	Drill	Weekly
	MAPEX	Monthly
	LFX	Annually
	Engagements	
	Table I (TPT)	Monthly
	Table II (TPT)	Monthly
	Table III (TPT, Tactical equipment)	Monthly
	Table IV (TPT)	Quarterly
	Table V (TPT, Tactical equipment, Targets)	Quarterly
	Table VI (Tactical equipment)	Quarterly
	Table VII & VIII (Tactical equipment)	Quarterly

b. Products: Required to support collective training.			
Product	**Required Date**	**Resource Documents**	**Responsible Agency**
ARTEP-Crew/Battle Drills	TBD	Installation Contract	DOTD, USAADASCH
Engagement Tables	TBD	Installation Contract	DOTD, USAADASCH
ARTEP-MTP	TBD	Installation Contract	DOTD, USAADASCH
STX	TBD	METL	Unit
TSOP	TBD	METL	Unit
FM	TBD	Installation Contract	DOTD,

ANNEX D

Training Development Milestone Schedule.

Individual Training Plan Guardian Crew Member

Milestone:	Date
1. Initial Individual Training Plan (ITP) submitted.	TBD
2. Annotated task list submitted.	TBD
3. Course Administrative Data submitted.	TBD
4. Training Program Worksheet (TPW) submitted.	TBD
5. ITP submitted (updated).	TBD
6. POI submitted.	TBD
7. Resident course start date.	TBD

Army Correspondence Course Program

Milestone: N/A	Date
1. Requirement identified and submitted for approval.	N/A
2. Requirement approved by HQ TRADOC.	N/A
3. Development initiated.	N/A
4. Advance breakdown sheet submitted.	N/A
5. Camera-ready mechanicals submitted.	N/A
6. Subcourse material ready for distribution.	N/A

Army-wide Doctrine and Training Literature Program (ADTLP)

Milestone:	Date
1. Requirements identified.	TBD
2. Draft ADTLP changes validated.	TBD
3. Field Manual (FM) outlines approved.	TBD
4. FM coordinating draft completed.	TBD
5. Print request initiated.	TBD
6. Approved electronic camera-ready copies submitted.	TBD
7. Printing and distribution completed.	TBD

D-1

ANNEX D

Soldiers' Training Publications

Note: Includes the soldiers' manual (SM), Army Training and Evaluation Program (ARTEP), and trainers' guide (TG).

Milestone:	Date
1. Analysis completed.	TBD
2. Coordinating Draft SM, ARTEP, and TG.	TBD
3. ATSC staffing.	TBD
4. Final Draft submitted.	TBD
5. Distribution completed.	TBD

Interactive Multimedia Instruction (IMI)/Distance Learning

Milestone:	Date
1. Requirements identified and submitted for approval.	TBD
2. Requirements approved by ATSC & TRADOC.	TBD
3. Identify resources.	TBD
4. Develop and Validate courseware.	TBD
5. Master materials to ATSC for replication and distribution.	TBD
6. Replication and distribution completed.	TBD

Training Effectiveness Analysis (TEA)

Milestone:	Date
1. Interim TEA developed.	TBD
2. TEA updated for Milestone Decision Review I.	TBD
3. TEA updated for Milestone Decision Review II.	TBD
4. TEA updated for Milestone Decision Review III.	TBD
5. Post-Fielding TEA (PFTEA) planned.	TBD

DA Audiovisual Production Program (DAAPP)

Milestone:	Date
1. High-risk tasks and jobs identified.	N/A
2. Validated in storyboard.	N/A
3. DAAPP requirements submitted to ATSC.	N/A
4. Requirements approved by DA.	N/A
5. Production initiated.	N/A

Training Aids, Devices, Simulations, and Simulators (TADSS)/Embedded Training (ET)

Milestone:	Date
1. High risk, hard-to-train tasks identified.	N/A
2. TADSS concept validated.	N/A
3. Need for TADSS/ET identified.	TBD
4. TADSS/ET incorporated into the STRAP.	TBD
5. Analytical justification via TEA.	TBD
6. Training ORD developed, if required.	TBD
7. TADSS/ET incorporated into the Operational Requirements Document (ORD).	TBD
8. MOS-specific milestone/requirements for TADSS/ET developed and incorporated in integrated training strategy (ITS).	TBD
9. TADSS/ET effectiveness validated (PFTEA).	TBD

Facilities

Milestone:	Date
1. Range and Facility requirements identified.	TBD
2. Construction requirements submitted to MACOM.	TBD
3. Development of construction requirements completed.	TBD
4. Requirements validated and updated.	TBD
5. Supporting requirements identified and availability coordinated.	TBD
6. Installation and other construction requirements submitted to MACOM.	TBD
7. Refined construction requirements and range criteria forwarded to MACOM.	TBD
8. Construction initiated.	TBD

Training Ammunition

Milestone:	Date
1. Ammunition identified.	N/A
2. Tentative validation of ammunition requirements.	N/A
3. Requirements included in the ORD.	N/A
4. Ammunition item developed.	N/A
5. Validation and test complete.	N/A
6. Ammunition requirements in the ITP.	N/A
7. Requirements provided to installation/MACOM manager.	N/A
8. Requirements included in DA PAM 350-38.	N/A
9. Production/Procurement.	N/A

ANNEX E

RESOURCE SUMMARY

1. Facilities Requirements. (Military Construction Army (MCA) plus Operations and Maintenance, Army (OMA) and Other Procurement Army (OPA) tails.) The purpose of OMA and OPA tails is to ensure critical support of MCA projects. They identify essential habitability items and operations equipment.

Description	Appn	Amount	FY Required	$ Source
a. USAADASCH				
Classroom XXI:				
Level 1 (32 Students)	OMA/OPA	$00.0K-TBD	TBD	HQDA/PM
Level 2 (22 Students)	OMA/OPA	$00.0K-TBD	TBD	HQDA/PM
New Training Facility	MCA	$00.0K-TBD	TBD	HQDA/PM
Facilities/ Class Furnishings	OMA	$00.0K-TBD	TBD	HQDA/PM
Information Infrastructure	OPA	$00.0K-TBD	TBD	HQDA/PM
Building Modifications	OMA	$00.0K-TBD	TBD	HQDA/PM
b. USAOMMCS				
New Training Facility	MCA	$00.0K-TBD	TBD	HQDA/PM
Facilities/ Class Furnishings	OMA	$00.0K-TBD	TBD	HQDA/PM
Information Infrastructure	OPA	$00.0K-TBD	TBD	HQDA/PM
Building Modifications	OMA	$00.0K-TBD	TBD	HQDA/PM

2. Additional Equipment Requirements. (OPA Funded)

a. USAADASCH

Tactical Equipment	BOIP Number	Number Required
Guardian System	TBD	TBD
Equipment (TADSS)		
Embedded Troop Proficiency Trainer (TPT)	TBD	TBD

b. USAOMMCS

Tactical Equipment	**BOIP Number**	**Number Required**
Guardian System	TBD	TBD
Equipment (TADSS)		
TBD	TBD	TBD

3. Additional OMA Funding Requirements. (TRADOC funding responsibility FY03+.)

Description	**Appn/Amount**	**Freq**	**Req'd**	**Source**
a. Training -				
USAADASCH:				
Civilian Payroll	OMA/$00.0K-TBD	R	TBD	TRADOC- TBD
Contract Maintenance	OMA/$00.0K-TBD	R	TBD	TRADOC- TBD
Supplies/Equipment	OMA/$00.0K-TBD			
USAOMMCS:				
Civilian Payroll	OMA/$00.0K-TBD	R	TBD	TRADOC- TBD
Contract Maintenance	OMA/$00.0K-TBD	R	TBD	TRADOC- TBD
Supplies/Equipment	OMA/$00.0K-TBD			
b. Training Support -				
USAADASCH:				
Civilian Payroll	OMA/$00.0K-TBD	R	TBD	TRADOC- TBD
Printing	OMA/$00.0K-TBD	R	TBD	TRADOC- TBD
Supplies/Equipment	OMA/$00.0K-TBD			
USAOMMCS:				
Civilian Payroll	OMA/$00.0K-TBD	R	TBD	TRADOC- TBD
Printing	OMA/$00.0K-TBD	R	TBD	TRADOC- TBD
Supplies/Equipment	OMA/$00.0K-TBD			
c. Base operations (BASOPS) -				
USAADASCH:				
Utilities	OMA/$00.0K-TBD	R	TBD	TRADOC- TBD
In/Out Processing	OMA/$00.0K-TBD	R	TBD	TRADOC- TBD
Information	OMA/$00.0K-TBD	R	TBD	

Management

USAOMMCS:

Utilities	OMA/$00.0K-TBD	R	TBD	TRADOC-FY07+
In/Out Processing	OMA/$00.0K-TBD	R	TBD	TRADOC-FY07+
Information Management	OMA/$00.0K-TBD	R		

Note: "R" is for recurring.

4. Additional Manpower Requirements

Description	**OFF**	**WO**	**ENL**	**CIV**	**TOTAL**

a. Training - Note: Numbers are estimates.

USAADASCH: TBD

Instructors
Overhead

USAOMMCS: TBD

Instructors
Overhead

b. Training Support -

USAADASC: TBD

Training Development
Training Evaluation

USAOMMCS: TBD

Training Development
Training Evaluation

c. Base operations (BASOPS) -

USAADASCH: TBD

AG

Finance

USAOMMCS: TBD

AG
Finance

ANNEX F

REFERENCES

The following references pertain to the operational testing and subsequent fielding of Guardian:

Guardian ORD:	**TBD**
System MANPRINT Management Plan (SMMP):	**TBD**
Basis of Issue Plan (BOIP) approved:	**TBD**
New Equipment Training Plan (NETP) Number:	**TBD**
Army Modernization Information Memorandum (AMIM) Number:	**TBD**

ANNEX G

COORDINATION

SYSTEM: GUARDIAN		**DATE:** TBD **(TRADOC Staffing)**	
	COMMENTS		
AGENCY	**SUBMITTED**	**ACCEPTED**	**RATIONALE FOR NON-ACCOMMODATION**
Commander, 6th BDE	X	X	
Commander, 2-6 ADA	X	X	
Commander, 3-6 ADA	X	X	Opposed to using new or existing MOSs. Concerned about providing a billpayer for this course.
TRADOC System Manager (TSM), TMD	X	X	Negative response.
TRADOC Project Office (TPO), SHORAD	X	X	
Director, USAADASCH, DCD, Weapons Division	X	X	
Director of Training Management, OMMCS	X	X	
Director of Training Management, USACASCOM	X	X	
USAADASCH, OCADA	X	X	Concerned about providing a billpayer for this course. Concerned with training location. (space for launch and recovery)
USAOMMCS, RSA	X	X	Concerned with location of Basic Electronics training for the Aerostat Crew Member.
USAADASCH, DOTD, Warfighter Div	X	X	
USAADASCH, DOTD, Warrior Div	X	X	
TRADOC ATSC	X	X	Comments incorporated.
ODCSLOG	X	X	Negative response.
JLENS Project Office	X	X	

ANNEX H

ACRONYMS

Acronym	MEANING
ABCS	Army Battle Command System
AC	Active Component
ACCP	Army Correspondence Course Program
AC/RC	Active and Reserve Components
ADA	Air Defense Artillery
ADCATT	Air Defense Combined Arms Tactical Training
ADTLP	Army-wide Doctrine and Training Literature Program
AIT	Advanced Individual Training
AMC	United States Army Materiel Command
AMD	Air and Missile Defense
AMIM	Army Modernization Information Memorandum
AMT	Army Modernization Training
AMTAS	Army Modernization Training Automation System
ANCOC	Advanced Noncommissioned Officers Course
AR	Army Regulation
ARNG	Army National Guard
ARTEP	Army Training and Evaluation Program
ASAT	Automated Systems Approach to Training
ATSC	Army Training Support Center
AUTL	Army Universal Task List
BD	Battle Drill
BMC4I	Battle Management, Command, Control, Communications, Computers and Intelligence
BOI	Basis of Issue
BOIP	Basis of Issue Plan
C2	Command and Control
C3I	Command, Control, Communications, and Intelligence
C4I	Command, Control, Communications, Computers and Intelligence
CAD	Course Administrative Data
CATS	Combined Arms Training Strategy

ANNEX H

Acronym	MEANING
CATT	Combined Arms Tactical Trainer
CBT	Computer-Based Training
CCC	Captain's Career Course
CD	Combat Development
CDROM	Compact disk read-only memory
CF	Career Field
CFP	Concept Formulation Package
CFR	Code of Federal Regulations
CFX	Command Field Exercise
CM	Cruise missile
COE	Common Operational Environment
CPX	Command Post Exercise
CSS	Combat Service Support
CT	Collective Training
CTC	Combat Training Center
CTC-IS	CTC Instrumentation System
CTC-OIS	CTC Objective Instrumentation System
CTLS	Critical Task List
CTP	Common Tactical Picture
CTX	Combined Training Exercise
DA	Department of the Army
DAC	Department of the Army Civilian
DCA	Defensive Counter-Air
DCD	Directorate of Combat Developments
DII	Defense Information Infrastructure
DIS	Distributed Interactive Simulation
DL	Distance learning
DoD	Department of Defense
EAC	Echelons Above Corps
ET	Embedded Training
ET/TADSS	Embedded Training/ Training Aids, Devices, Simulations and Simulators

Acronym	MEANING
FM	Field Manual
FOC	Future Operating Capabilities
FoS	Family of Systems
FTX	Field Training Exercise
FUE	First Unit Equipped
Guardian	New name for JLENS
FY	Fiscal Year
HE	Human Engineering
I&KP	Instructor and Key Personnel
IAW	In Accordance With
IET	Initial Entry Training
IETM	Interactive Electronic Technical Manual
IMI	Interactive Multimedia Instruction
IMT	Institutional Maintenance Trainer
IOC	Initial Operating Capability
ISR	Intelligence, Surveillance and Reconnaissance
ITP	Individual Training Plan
JLENS	Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (0ld name for Guardian)
JTAMD	Joint Theater Air and Missile Defense
LACM	Land Attack Cruise Missile
LAN	Local area network
MANPRINT	Manpower and Personnel Integration
MATDEV	Materiel Developer
METL	Mission Essential Task List
METT-TC	Mission, Enemy, Terrain and Weather, Troops, Time available and Civilian considerations
MIL-H	Military Handbook
MIL-STD	Military Standard
MNS	Mission Needs Statement
MOS	Military Occupational Specialty
MTP	Mission Training Plan

ANNEX H

Acronym	MEANING
MTW	Major Theater Wars
N/A	Not Applicable
NBC	Nuclear, Biological and Chemical
NCO	Non-commissioned Officer
NET	New Equipment Training
NETP	New Equipment Training Plan
NETT	New Equipment Training Team
NG	National Guard
NLOS	Non-line-of-sight
OAC	Officer Advanced Course
OBC	Officer Basic Course
OCA	Offensive Counter-Air
OFC	Objective Force Capabilities
ORD	Operational Requirements Document
PFTEA	Post Field Training Effectiveness Analysis
POI	Program of Instruction
PSS	Performance Support Systems
QQPRI	Qualitative and Quantitative Personnel Requirements Information
R&M	Reliability and maintainability
RC	Reserve Component
SAT	Systems Approach to Training
SCORM	Sharable Courseware object reference model
SE	Synthetic environment
SM	Soldier Manuals
SME	Subject matter expert
SO	Stability Operations
SSA	Sustainment and Supportability Analysis
SSC	Smaller-Scale Contingencies
ST	Situational Training
STP	Soldier Training Publication
STRAC	Standards in Training Commission

ANNEX H

Acronym	MEANING
STRAP	System Training Plan
STX	Situational Training Exercise
SWOC	Senior Warrant Officer Course
TAD	Target Audience Description
TADSS	Training Aids, Devices, Simulations and Simulators
TAMD	Theater Air and Missile Defense
TASS	Total Army School System
TATS	Total Army Training System
TBD	To Be Determined
TD	Training Development
TEMP	Test and Evaluation Plan
TG	Trainers Guide
TM	Technical Manual
TMDE	Test, Measurement, and Diagnostic Equipment
TNGDEV	Training developer
TPT	Troop Proficiency Trainer
TPW	Training Program Worksheet
TRADOC	Training and Doctrine Command
TSM	TRADOC System Manager
TSP	Training support package
TTP	Tactics, Techniques, and Procedures
USAADASCH	United States Army Air Defense Artillery School
USACAC	United States Army Combined Arms Command
USACASCOM	United States Army Combined Arms Support Command
USAMICOM	United States Army Missile Command
USAOMMCS	United States Army Ordnance Missile and Munitions Center and School
USAR	United States Army Reserve
USASIGSCH	United States Army Signal School
USAOC&S	United States Army Ordnance Center & School
USATSC	United States Army Training Support Center
WBT	Web-Based Training

Acronym	MEANING
WOTCC	Warrant Officer Technical Certification Course

ANNEX I

Training Aids, Devices, Simulators and Simulations (TADSS)/Embedded Training (ET)

a. Purpose

The TADSS/ET annex provides a detailed description of TADSS/ET requirements necessary to support training for NET, the institution, the unit, and CATS. It is important to note that wherever and whenever possible TADSS/ET capabilities will be used. The focus of this strategy is to ensure training can be accomplished at unit locations in real-time without relying heavily on the institutional training base. Units will have the capability to train tasks necessary to ensure skills and proficiencies match operational requirements. The Guardian system will interoperate with real world C^4I systems and simulators and simulation systems to train the unit. The Guardian system will be linked to a networked training capability (functional embedded training) with Army Battle Command Systems (ABCS) devices, to include the Global Command and Control System-Army (GCCS-A) and other C^4I devices as appropriate. It should also link into the Family of Simulations (FAMSIM) training systems such as the Corps Battle System (CBS) and WARSIM 2000 for training, rehearsals and determining courses of action. Every effort should be made to leverage Synthetic Environment (SE) Core technologies to train and execute mission rehearsals in the SE and Synthetic Theater of War (STOW) environments. The NET training device requirement is to have system TADSS/ET available during NET training. Specific TADSS/ET capabilities that can be identified at this early stage are covered in the following paragraphs.

b. Overview

The following charts summarize each TADSS/ET requirement for the Guardian system. They depict where the TADSS/ET requirements are to be located, the ET categories, and the training arena supported. These charts are not intended to limit use of TADSS/ET but to present in chart format where TADSS/ET are envisioned to be used. These locations may change based on operational needs and future analysis to be performed.

ANNEX I

Table I-1. TADSS

Training Aids, Devices, Simulators, and Simulations (TADSS) Requirements for the Guardian System				
TADSS EQUIPMENT				
PURPOSE/FUNCTION	**NET**	**INSTITUTION**	**CTC**	**UNIT**
Guardian Embedded Trainer (ET)				
Target Engagement Training	X	X	X	X
Simulated Missile Firing	X	X	X	X
Crew Operations	X	X	X	X
Force Operations	X	X	X	X
CATS	X	X	X	X
Institutional Maintenance Trainer (IMT) with ET capabilities				
Critical Tasks with Fault Diagnosis	X	X		X
Repairer Tasks of the Guardian System	X	X		X

c. TADSS Strategy

The following paragraphs explain in detail what the necessary TADSS capabilities are to support Guardian system training. It is important to note that embedded training capabilities will be used whenever and wherever possible. Since things change during the Life Cycle Development and Procurement it is envisioned that the TADSS requirements explained here provide the best estimate to date.

Institutional and unit/sustainment training will require new training devices to support the Guardian system. These training devices will be realistic and replicate the system's hardware, software, and operational functions. See the Guardian ORD for detailed discussion of all Guardian training devices and requirements. The USAADASCH training device strategy is to teach institutional and unit training with TADSS combined with ET and standard Programs of Instruction (POIs). Individual and collective tasks will be taught using the institutional and/or unit training devices.

Guardian soldiers, through a combination of individual and collective tasks, will be trained to the skill levels required to operate and maintain the Guardian system. The training is designed to meet Standards in Training Commission (STRAC) crew qualification standards and support CATS. Training device programmed growth will allow interaction with the Air Defense Combined Arms Tactical Trainer (ADCATT) and will provide the training capability to perform interface and inter-operability functions. Integrated training with other combined arms units will provide continuity on the battlefield for situational awareness and support Army characteristics. This will include using Distributed Interactive Simulation (DIS) and the Synthetic Theater of War (STOW) capabilities and will be HLA compliant.

The Guardian IMT must provide performance oriented training and be designed to train critical tasks associated with fault diagnosis and isolation on the Guardian weapon system. This feature is required to assess repairer performance. The IMT must replicate the tactical system in three-dimensional (3-D) fidelity to train all critical tasks, and all tasks selected by the proponent school for the device identified to support maintenance on the Guardian system. This device provides realistic training without the need for tactical equipment. The skills learned on this device must be directly transferable to the tactical equipment. The IMT emulates the Guardian system by responding in the same manner and having the same performance fidelity as the objective system. It will simulate system hardware interfaces and permit institutional training of maintenance functions associated with organizational maintainers.

d. Data Sources

As funding becomes available, a Training Impact Analysis, a Cost and Training Effectiveness Analysis and a Sustainment and Supportability Analysis will be performed for an accurate assessment of TADSS required to support the Guardian system.

e. TADSS Type

This list of type TADSS is not all inclusive but is to be considered for inclusion in the Combined Arms Training Strategy (CATS).

Table I-2. TADSS for CATS

Type TADSS to be Considered for CATS	
Embedded Training Software	**System ET**
IMI	TSP for NET/Institution/Sustainment training
Operations Training	
Tactical Operations	System ET
Force Operations	System ET
Joint Operations	System ET
Defense Planning	System ET
Networked Simulator or Simulation	System ET
Distance Learning Capability (DLC)	System ET
Synthetic Theater of War (STOW)	System ET
Multimedia Products	
Computer Assisted Instruction (CAI)	System ET
Computer-Based Training (CBT)	System ET
Web-Based Training (WBT)	System ET
Interactive Electronic Technical Manuals (IETM)	System ET
Interactive CD ROM Capability	System ET

f. Embedded Training

ET is not a separate training device but is a software capability in the tactical equipment. ET is a capability built into, added onto or connected to operational systems. It enables training delivery to soldiers using their own equipment while in the field or at home station. It will not adversely impact the operational requirements or capabilities of the system and should be identified early on to be incorporated into initial prototype design. It includes embedded user assistance, embedded simulation capability, embedded connections for attachment of appended training simulations, simulators and training instrumentation. ET includes system design allowing dual use of communication and instrumentation capability for training and tactical use and the use of system operating controls with appended/embedded training simulations. It can also provide a mechanism for interactive access, feedback, storage and dissemination of lessons learned as they occur.

The Guardian system will use embedded training capabilities to support all training during training exercises. Sustainment training will also be conducted via training exercises on Guardian system hardware. Further augmentation of sustainment training will occur through the use of an embedded Troop Proficiency Trainer (TPT) type capability in the system software which simulates operational tactical battlefield information and provides unit sustainment training. This will allow operators, staff and commanders to maintain proficiency in tactical decision-making procedures and console operation procedures through air defense battle and Distributed Interactive Simulation (DIS) networks. The embedded training must be interoperable through High Level Architecture (HLA) and the Synthetic Theater of War (STOW) architecture to link the live, virtual, and constructive pieces of the training arena.

Table I-3. Embedded Training Capability

TACTICAL EQUIPMENT WITH EMBEDDED TRAINING CAPABILITY				
PURPOSE/FUNCTION	**ET CATEGORY**	**NET**	**INSTITUTION**	**UNIT**
• Crew Operations	A, B, C, D	X	X	X
• Maintainer Functions	A, B	X	X	X
• Engagement Operations	A, B, C, D	X	X	X
• Force Operations	A, B, C, D	X	X	X
• Evaluation Function	A, B, C, D	X	X	X
• CATS	A, B, C, D	X	X	X

Note: ET Categories: There are four embedded training categories based on the level of training to be fulfilled. They are aligned along the training spectrum from individual to collective tasks:

Category A: Individual/Operator. The objective of Category A is to train and sustain individual operator and maintenance task skills.

Category B: Crew/Team. Category B's objective is to train and sustain combat ready crews and teams. This category builds on individual skills acquired from Category A.

Category C: Functional. The objective of Category C is to train and sustain commanders, staffs, and crews/teams within each functional area to be utilized within their operational role.

Category D: Force Level/Combined Arms and Battle Staff. Category D's objective is to train and sustain combat ready commanders and battle staffs utilizing the operational system in its operational role.

The Guardian ET provides realistic operator and crew training using Guardian hardware and operational software. The embedded training supports training in both garrison and field environments. The selection of the ET mode may also operate concurrently with the operations mode. Fail-safe measures will prevent the transmission of messages and commands during ET that could result in unintentional launch, radar operation, or damage to personnel and equipment.

Individual training for the Guardian operator guides the soldier through hands-on practice in the use of Guardian hardware, software publications, and operator level fault detection and isolation software. Operator task training reinforces skills learned in training institutions and teaches advanced skills detailed in the applicable Soldier Training Publications (STPs), in the Crew Drills and Mission Training Plans (MTPs).

Embedded training capabilities also support multi-echelon collective training for Guardian crews. During ET, operators interact with the system in the same manner as they would under actual combat conditions. Using simulations of Guardian equipment the embedded training software generates a high-fidelity simulation of force on force combat operations through interaction with the Guardian software. ET allows the simultaneous processing and display of “live” targets and simulated targets. Training may be conducted in a standalone mode or linked with adjacent units and/or higher echelons. Guardian units may also participate in netted Air Defense Combined Arms Tactical Training (ADCATT) and joint training exercises through interface with DIS compliant simulations such as Synthetic Theater of War-Theater Missile Defense (STOW-TMD), Extended Air Defense Simulation (EADSIM), and Warfighter Simulation 2000 (WARSIM 2000).

ET also provides evaluation functions for defense planning and rehearsal. Results of war games based on operator Measures of Effectiveness (MOEs) and Measures of Performance (MOPs) are provided to adjust decisions and training during theater defense battle operations.